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# Composition dependence of the magnetic and electronic properties of $UPd_{2-x}Sn$ *

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We have investigated the electronic transport and magnetic properties of heavy-fermion $UPd_{2-x}Sn$ with $0 \leq x \leq 0.15$. Previously, it has been established that introducing Pd vacancies in $UPd_2Sn$ drastically affects its physical and structural properties: while $UPd_2Sn$ crystallizes in an orthorhombic $Pnma$ lattice and shows a non-magnetic ground state, $UPd_{2-x}Sn$, $x$= 0.15, with a cubic $Fm\bar{3}m$ structure is antiferromagnetically ordered. Here, we demonstrate that also the electronic transport properties of $UPd_2Sn$ are strongly dependent on the Pd content: while for $UPd_2Sn$ we observe an overall metallic heavy fermion resistivity with a positive temperature derivative $d\rho/dT$, $UPd_{1.85}Sn$ exhibits a negative $d\rho/dT$ up to room temperature. Size as temperature dependence of $\rho$ and Hall effect data for $UPd_{1.85}Sn$ are inconsistent with a semiconducting or semimetallic ground state. In order to assess the relevance of crystallographic disorder we study in detail the composition dependence of the properties of $UPd_{2-x}Sn$. From our study we establish a phase diagram of the structural and ground state properties of $UPd_{2-x}Sn$ as function of $x$.

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